The vertebra-angles of 20's, 30's, 40's, 50's and 60's were −0.66° ± 0.3, 0.17° ± 0.2, −0.25° ± 0.3 −0.24° ± 0.3 and −0.27° ± 0.4, respectively.

Statistical differentiation was not detected in the comparison of vertebrae among age groups (20's, 30's, 40's, 50's and 60's).

The vertebra-angles were −1.1° ± 0.2 (in female) and 0.4 °± 0.2 (in male).

Female vertebra has posterior tilted angle. On the other hand, male has anterior tilted angle (p<0.01). The gender difference of vertebrae angles are figured out.

[Disc]

The disc-angles of 20's, 30's, 40's, 50's and 60's were −5.6° ± 0.3, −6.2° ± 0.2, −6.4° ± 0.3, −6.6° ± 0.4 and −7.7° ± 0.3, respectively.

The age group of 60's has more posterior tilted angle than the others ($p < 0.05$). The age group of 50's has posterior tilted angle than 20's ($p < 0.05$). Otherwise, there was no significance difference among other groups.

The disc-angles were −6.1° ± 0.2 (in female) and −6.7° ± 0.2 (in male).

Male has more posterior tilted angle ($p < 0.01$). The gender difference of disc angles was figured out.

Conclusions: Tilting angle of lumbar spine was measured in vivo.

Over all, lumbar lordosis is consisted with discs mostly.

Female has more lordosis vertebra. Interestingly male has more lordosis disc. In skeletal system, sex differentiation of pelvis is well-known. This time, sex differentiation of lumbar vertebra, which is as adjacent bone of pelvis, was also found out. Discs have structure with larger elastic deformation. Although the relationship with these results was not known, it could play important roles of adaptation with acute body shape deformity such as pregnancy.

Lindsay et al reported that, having 1 or more vertical compression fracture leads to a 5-fold increase in developing another vertebral fracture.

In biomechanical study, spine alignment is thought to affect mechanical stress.

Spinal alignment change would be risk factor of compression fracture together with bone density decreasing.

In our study, age-dependency of disc figures was detected between the 60's and younger generations (20's to 50's). The 60's has more posterior tilted angle.

It suggests higher lumber lordosis in elderly group.

To understand the mechanism of LBP and to acquire longer and healthy lifetime, the relationship between spinal alignment and osteoporosis is expected to study more.

0039

Modified Male Osteoporosis Self-Assessment Tool for Taiwan (MOSTAi)-A Sub-Study of Taiwan OsteoPorosis Survey (TOPS)

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Objectives: To develop a MOSTAi and validate it by comparing with Osteoporosis Self-assessment Tool for Asian (OSTA) and the National Osteoporosis Foundation recommendations in 2013 (NOF 2013) for bone mineral density (BMD) testing in Taiwanese men.

Methods: A bus, equipped with Dual-energy X-ray absorptiometry and conducted by Taiwan Osteoporosis Association, serving for country-wide BMD testing in Taiwanese was available between 2008 and 2011. All participants must complete a questionnaire regarding risk factors of osteoporotic fracture in FRAX® tool before BMD testing. Followed the original Koh model of OSTA (OSTA Index = 0.2 x Weight [Kgs] − 0.2 × Age [Years]), we used the database to analyze potential risk factors and develop a risk index via multiple variable regression analysis and item reduction. Then, we use these index values to set up a simple algorithm (namely MOSTAi, MOSTAi Index = 0.3 × Weight [Kgs] − 0.1 × Age [Years]) for identifying those men who need BMD testing. Furthermore, we validated MOSTAi and compared it with the OSTA and NOF 2013 by the receiver operating characteristic (ROC) curve analysis and analyzing their sensitivity/specificity. As European guidance, we set intervention thresholds as FRAX®-based 10-year probability of a major osteoporotic fracture equivalent to men with a previous fracture (enter their respective age, height, weight and gender, but no other clinical risk factors, and without BMD). If a man's FRAX®-based 10-year probability of a major osteoporotic fracture (with or without BMD) is equal to or over intervention threshold, he need intervention treatment. Finally, through the ROC curve analysis, we use FRAX®-based 10-year probability of a major osteoporotic fracture equivalent index to see whether MOSTAi index could effectively catch those men who require intervention treatment.

Results: A total of 2290 Taiwanese men (≧50y/o) were enrolled in this survey. The index score was derived by age and body weight of the participants according to weighted odds of each risk factor and the selected index score was set at "11". The AUC for MOSTAi, OSTA and NOF 2013 were 0.702(95% confidence interval (CI): 0.672−0.732, $p < 0.001$), 0.695 (95% CI: 0.666−0.724, $p < 0.001$) and 0.588(95% CI: 0.559−0.617, $p < 0.001$), respectively. The sensitivity, specificity and accuracy of MOSTAi (cutoff value = 11) and NOF 2013 to identify osteoporosis were 62.5%, 70.9%, 69.6% and 86.3%, 31.2%, 40.2%, respectively. In the validation of MOSTAi for predicting those men who need intervention treatment, the sensitivity and specificity were 51.4% and 54.5%, respectively, while the cutoff value was 12. The AUC was 0.530(95% CI: 0.498−0.563, $p = 0.058 > 0.001$).

Conclusions: MOSTAi is a more suitable model to identify Taiwanese men with osteoporosis than the original OSTA model. In comparison with NOF 2013, MOSTAi may be an easier and better tool for referral to BMD testing by DXA in Taiwanese men. MOSTAi index couldn't effectively catch those men who require intervention treatment.

0050

Dose Postoperative Applications of Diphosphonate Medicine at an Early Stage Have Influence on Union of Fracture?

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Background: Surgical and conservative treatments are both crucial method to deal with osteoporotic fracture, anti-osteoporotic therapy

is the most important among conservative treatments and diphosphonate medicine is the first-line choice. The pharmacological action of diphosphonate medicine is to inhibit the function of osteoclast, so there is no consensus if it will inhibit porosis and union of fracture.

Purpose: Our study is aim to find out the influence of diphosphonate medicine to osteoporotic distal radial fracture retrospectively.

Method: From February of 2011 to March of 2014, total 78 patients suffered from distal radial fracture whose age is 57.3±15.8 including 31 male patients and 47 female patients. Open reduction and internal fixation have been performed to all patients; the type of fracture and postoperative bone density both have been recorded. 26 cases used zoledronic acid at 3 days after operation are divided into group A, 16 cases used zoledronic acid at 3 months after operation are divided into group B, 24 cases used alendronate at 3 months after operation are divided into group C, and 10 cases used nothing are divided into group D. We evaluated the union of fracture according to clinical test and radiological data at 3 months and 6 months after operation, and we retest the bone density at 6 months after operation. We chose SPSS17.0 to compare the rate of union and bone density among these groups.

Result: Preoperative type of fracture and bone density have no significant difference among each group. As to union of fracture, the rates of union at 3months after operation are 21/26 (group A), 13/18(group B), 19/24(group C), 9/10(group D), no significant difference has been found. The rates of union at 6 months after operation are 24/26(group A), 18/18(group B), 23/24(group C), 10/10(group D), no significant difference have been found either. The bone density at 6 months after operation of group A is higher than group D, but no difference has been found.

Conclusion: Applications of diphosphonate medicine at an early stage for osteoporotic distal radial fracture has no significant influence to the union of fracture. Bone density has no significant influence at the early stage either and further observation should be taken.